

**ABSTRACT OF THE DISCLOSURE**

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3       **Methods, apparatus and systems for implementing an algorithm for N-symbol**  
4 **noncoherent processing of M-ary DPSK signals in a pilotless, wireless system is**  
5 **provided. The algorithm is carried out with (N-1) recurrent steps (iterations) plus a**  
6 **decision step. Each iterative step includes simple trigonometrical transformation of**  
7 **quadrature components of the current symbol and summation of the transforms with**  
8 **results of the previous step. A final N-symbol decision regarding the current transmitted**  
9 **symbol corresponds to the vector of maximum length, calculated after the (N-1)-th step**  
10 **of the iterative procedure. The general algorithm is optionally implemented with one or**  
11 **more intersymbol processors, one or more memory blocks for saving results of the**  
12 **intersymbol processors, and a decision block. In addition, shift registers for quadrature**  
13 **components of the received signal may be utilized.**